

# EXHIBIT

F – Part

III

Spray Applied Fireproofing  
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NOTARIZED CERTIFICATES OF COMPLIANCE

Item No.	Description	Standard
C1	Underwriters' Laboratory tests for each type of installation	ASTM E-119
C2	Performance requirements	As specified
C3	Manufacturer's application instructions	--

- B. Manufacturer's data: Submit manufacturer's specifications and include certification from materials manufacturer as may be required to show material compliance with Contract Documents. Include certification from manufacturer, signed by an officer of the firm, stating that the proposed material is free of all forms of asbestos, including actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite and asbestos contaminated vermiculite.
- C. Test data: Laboratory test results for sprayed fireproofing shall be submitted for the following, upon request.
1. Corrosion Resistance per Military Specification MIL-E-5272C and ASTM E-937.
  2. Deflection per ASTM E-759.
  3. Bond Impact per ASTM E-760.
  4. Compressive Strength per ASTM E-761.
  5. Bond Strength per ASTM E-736.
  6. Air Erosion per ASTM E-859.
  7. Surface Burning Characteristics per ASTM E-84.
  8. Indentation Hardness per ASTM C-569.
  9. Dry Density per ASTM E-605.
  10. Definition of Cementitious Materials - UL.
- D. Submit laboratory test reports and/or engineering studies in accordance with ASTM E-119, indicating fire endurance as required to satisfy codes or other requirements. Extracts of classified listings of such tests performed by Underwriters Laboratories, Inc. (U.L.I.) of Northbrook, Illinois.
1. Test results from an independent testing laboratory indicating compliance of sprayed-on fireproofing products with performance requirements indicated, including asbestos content where applicable.
  2. Test results of in-place performance as required under Part 3 of this Section for field quality control.
  3. Submit evidence that the cementitious fireproofing has been tested per ASTM E-119 by Underwriters' Laboratories, Inc. Include

evidence that the fire testing was sponsored by the manufacturer and that material tested was produced at the manufacturer's facility under supervision of Underwriters' Laboratories personnel. Letters documenting classification status are not acceptable evidence of compliance with this Section.

- E. Submit qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.
  - F. Letters from testing laboratories summarizing a test or engineering studies shall be accepted as meeting the requirements for submission.
  - G. Submit U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous materials utilized during Work of this Section and certification by manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
  - H. Certificates from fireproofing manufacturer, for each fireproofing product required, indicating that:
    - 1. Primers applied to steel in shop or field are compatible with sprayed-on fireproofing and will not impair its performance under fire exposure for applications indicated, as provided by ASTM E-119 test. Include test and other data as evidence.
    - 2. Each fireproofing product required complies with specified product requirements and is suitable for the use indicated.
- 1.05 DELIVERY, STORAGE & HANDLING
- A. Package materials in sturdy moisture-proof packages and deliver to job site properly marked and labeled to show manufacturer's name, brand and certification of compliance with requirements for fire hazard, fire resistance classification, date of manufacture and shelf life.
  - B. Keep material dry until ready for use, off the ground under cover and away from sweating walls and other damp surfaces. Discard all bags that have been exposed to water or moisture. Material shall be used before its expiration date.
- 1.06 ENCOUNTERED CONDITIONS
- A. Ensure structure and surfaces to which sprayed fireproofing is applied is not enclosed and is open to view until application is reviewed.
  - B. The use of an accelerator is permitted per manufacturer's recommendations and instructions should the air temperature go below 40 degrees F.
- 1.07 ENVIRONMENTAL REQUIREMENTS
- A. When the prevailing outdoor temperature at the building is less than 40°F. (4°C.), a minimum substrate and ambient temperature of 40°F. (4°C.) shall be maintained prior to, during, and a minimum of 24 hours after application of the spray-applied fire-resistive material. If necessary for job progress, provide enclosures with heat to maintain temperatures.
  - B. Provide ventilation to allow proper drying of the spray-applied fire-resistive material during and subsequent to its application. In

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enclosed areas, ventilation shall not be less than 4 complete air changes per hour.

1.08 PROTECTION

- A. Provide ventilation in area(s) to receive fireproofing during and 24 hours after application, to properly dry material and maintain non-toxic, unpolluted safe working area.
- B. Protect adjacent surfaces and equipment from damage by overspray fall-out, and dusting. Mask adjacent work as required.
- C. Provide temporary enclosure to prevent spray from contaminating air.
- D. Close off and seal duct work in area(s) where fireproofing is applied.
- E. Protect applied sprayed fireproofing from damage.

1.09 SEQUENCING

- A. Sequence and coordinate application of sprayed-on fireproofing with other related work specified in other Sections to comply with the following requirements:
  - 1. Provide temporary enclosures to prevent deterioration of sprayed-on fireproofing for interior applications due to exposure to unfavorable environmental conditions.
  - 2. Avoid unnecessary exposure of sprayed-on fireproofing to abrasion and other damage likely to occur during construction operations subsequent to its application.
  - 3. Do not apply fireproofing to metal roof decking substrates until application of roofing has been completed; prohibit roof traffic during application and drying of fireproofing.
  - 4. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, tested, and corrections made to any defective fireproofing.

1.10 WARRANTY

- A. Provide certificate stating that sprayed fireproofing has been completed in full accordance with requirements to provide necessary fire resistance ratings.
- B. Provide warranty stating applied fireproofing will remain free from cracks, checking, dusting, flaking, spalling, separation and blistering for minimum period of 2 years from date of Substantial Completion and reinstallation or repair to satisfaction of Owner at no additional cost.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Interior or Non-Weather Exposed
  - 1. W.R. Grace & Co., Monokote MK-6/CBF - MK-6/ED
  - 2. Isolatek International - Cafco 300

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3. Mandoval Vermiculite Products, Inc. - Mandolite P-20
4. Carbolite Fireproof Products Division - Pyrolite 1
5. or an equal acceptable to the Architect.

B. Weather Exposed (Garage Ramp Structure/Beams and Columns)

1. W.R. Grace & Co., Monokote Type Z-146
2. Isolatek International - Cafco 800
3. or an equal acceptable to the Architect.

2.02 MATERIALS

- A. Spray-on fire-resistant coating shall be a cementitious setting based type as defined by Underwriters Laboratories and free from all forms of asbestos, actinolite, amosite, anthophyllite, chrysotile and tremolite.
  1. Cementitious admixtures refers to materials (with and without aggregate) which, when mixed in accordance with accompanying instructions forms a slurry or mortar providing properties necessary for the conveyance and application to building structures.
- B. Water shall be potable, fresh and free from organic and mineral impurities which would affect the set of the sprayed fireproofing materials.
- C. The fireproofing product shall be tested in accordance with ASTM Standard G-21, and shall show resistance to mold growth when inoculated with aspergillus niger, and mixed spore cultures, (Tappi T487-M54 and ASTM G-21). Mold inhibitor shall be added by the manufacturer.

2.03 AUXILIARY FIREPROOFING MATERIALS

- A. Provide auxiliary fireproofing materials that are compatible with sprayed-on fireproofing products and substrates, are approved for use indicated by manufacturer of sprayed-on fireproofing, and are approved by nationally recognized testing laboratories or other testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance rated designs indicated.
- B. Substrate primers: Type approved by manufacturer of sprayed-on fireproofing for substrate and for conditions of exposure indicated.
- C. Adhesive for bonding fireproofing: Type recommended by manufacturer of sprayed-on fireproofing manufacturer.

2.04 MIXING

- A. Perform mixing and preparation of the materials at the job site using mechanical equipment, in strict accordance with the approved manufacturer's printed directions to achieve the performance criteria specified herein.

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PART 3 - EXECUTION

3.01 AREA PREPARATION

- A. Provide necessary measures for protection of workers and public, as required under the regulations of the U.S. Occupational Safety and Health Act (OSHA), and applicable local ordinances, and/or code regulations.
- B. Provide protection for workers applying fireproofing and for other workers who are in the vicinity of application of mixing operations. Provide the necessary measures for protection of the general public and for prevention of air pollution as required. Enclose exterior opening at areas where spray application will be in progress.
- C. Provide masking, drop cloths, or other satisfactory covering for the materials which are not to receive fireproofing to prevent damage from contamination from overspray or fallout of materials. Clean or replace any damaged or contaminated materials.

3.02 EXAMINATION

- A. Examine surfaces to which this work is to be attached or applied and notify the Architect if conditions exist which are detrimental to the proper and expeditious installation of the work. Starting of work shall imply acceptance of the surfaces to perform the work as specified. A substrate is in satisfactory condition if it complies with the following:
  - 1. Substrate complies with requirements of the section in which the substrate and related work is specified and is free of oil, grease, rolling compounds, incomplete primers, loose mill scale, dirt or other foreign substances capable of impairing bond of fireproofing with substrate under conditions of normal use or fire exposure.
  - 2. Objects which will penetrate fireproofing, including clips, hangers, support sleeves and similar items have been securely attached to substrates.
  - 3. Substrates are not obstructed by ducts, piping, equipment and other suspended construction that could interfere with application of fireproofing and until it has dried.
- B. The Contractor shall cooperate with the coordination and scheduling of the work of this Section with the work of other Sections so as not to delay job progress.
- C. Clips, hangers, supports, sleeves and other attachments to the fireproofing bases, as covered under other sections of the specifications, are to be placed by other trades prior to the application of the fireproofing material, where these materials can be anticipated in advance.
- D. Ducts, piping or conduit or other suspended equipment that could interfere with the uniform application of the fireproofing material are to be positioned after the application of the sprayed fireproofing, unless fireproofing applicator agrees to their installation prior to fireproofing.
- E. Prior to application of fireproofing material, an inspection shall be made to see that all steel is acceptable to receive fireproofing.

Steel shall be free of oil, grease, loose mill scale, or any other substance that may impair proper adhesion.

3.03 SURFACE PREPARATION

- A. Surface to receive sprayed fireproofing shall be thoroughly cleaned so that no mill scale, dirt, grime, oil, grease, dust, loose rust, or other foreign material which will impair satisfactory bonding of fireproofing to the substrate are present.
- B. Clean substrates of substances which could impair bond of fireproofing, including oil, grease, rolling compounds incompatible primers, and loose mill scale.
- C. Prime substrates where recommended by fireproofing manufacturer, except where compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.
- D. Cover other work which might be damaged by fallout or overspray of fireproofing materials during application. Provide temporary enclosure as may be required to confine operations, protect the environment, and to ensure adequate ambient conditions for temperature and ventilation.
- E. Notify the Contractor of any surface condition which cannot be corrected by normal cleaning methods and requires correction of conditions prior to application of sprayed fireproofing.
- F. Commencement of application of fireproofing shall be deemed as acceptance by the applicator of the suitability of the surface to receive his work and acceptance of responsibility for failure of bond between fireproofing and substrate.

3.04 APPLICATION

- A. Apply sprayed fireproofing using an authorized installer of the manufacturer in strict conformance with his directions and instructions and in conformance with city and state codes, regulations and requirements having jurisdiction. A qualified manufacturer's representative shall be present for initial application to guide and assist applicator's personnel.
- B. Apply sprayed fireproofing to all areas and surfaces which are scheduled to be fireproofed and to the proper thicknesses to achieve the fireproofing hours which are scheduled herein.
  - 1. Control the thickness of the fireproofing by utilizing a workable depth gauge to assure that minimum thicknesses have been applied.
- C. Make provisions for ventilation to properly dry the fireproofing after application. In enclosed areas lacking natural ventilation, provide mechanical air circulation and ventilation.
- D. Equipment, mixing and application shall be in accordance with the manufacturer's written specification and application instructions. Material and water ratio shall be mechanically controlled on the project site.
- E. Provide qualified personnel to supervise the application.
- F. Bonding adhesive shall be applied to underside of steel roof deck units which do not have a concrete topping and where required by the appropriate UL Design. Bonding adhesive is optional in other conditions unless recommended by the manufacturer of sprayed fire



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protection material. All bonding adhesives shall be applied in accordance with the manufacturer's written application instructions.

- G. Do not install fireproofing prior to completion of concrete work on steel floor decks. Apply to the underside of roof deck assemblies where noted on drawings only after roofing application is complete and roof traffic has ceased.
- H. In addition to the patching of existing spray fireproofing required for the Contractor's own work, the Contractor shall include in its bid the cost for an additional 15,000 SF of fireproofing patching. This total quantity of additional patching shall be comprised of separate areas randomly located throughout the building in individual quantities no greater than 5 SF. This total quantity of additional patching shall be used at the sole discretion of the Owner. An adjustment shall be made to the contract amount via a credit change order for any unused portion of this square footage allowance.

## 3.05 PATCHING, REPAIRING, CLEANING AND PROTECTION

- A. Perform all patching and repairing of sprayed fireproofing, due to cutting by other trades, by the fireproofing applicator and paid for by the trade(s) that performed the cutting, as directed and at no additional cost.
  - 1. Coordinate installation of fireproofing with other work in order to minimize the need for other trades to cut or remove fireproofing. As other trades successively complete installations of their work, maintain protection of structure afforded by fireproofing by patching any areas which have been removed or damaged prior to concealment of fireproofing by other work.
- B. After completion of fireproofing work, remove equipment and clean all walls, floors, equipment, pipes, conduit, etc. of deposits of sprayed fireproofing materials.
- C. Cleaning: Immediately upon completion of spraying operations in each containable area, remove over-spray and fall-out materials from surfaces of other work and clean exposed surfaces to remove evidence of soiling.
- D. Cure exposed cementitious fireproofing materials in compliance with fireproofing manufacturer's recommendations to prevent premature drying.
- E. Protect fireproofing according to advice of fireproofing manufacturer and installer from damage resulting from construction operations or other causes so that fireproofing will be without damage or deterioration at time of Substantial Completion.

## 3.06 FIELD QUALITY CONTROL

- A. At the Owner's option the Architect may select, and the Owner will pay, an independent testing laboratory to sample and verify the thickness and density of the fireproofing in accordance with provisions of ASTM E-605 or Uniform Building Code Standard No. 43-9, and cohesion/adhesion as per ASTM E-736.
  - 1. Minimum testing as follows:
    - Randomly selected bay - test each fireproofed element within it for thickness and density as per ASTM E-605.



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- Randomly select typical structural elements of each type and test for cohesion/adhesion as per E-736.
  - Perform a minimum of five tests of each kind.
- B. The Contractor and this trade Contractor shall cooperate with the testing agency in furnishing samples for testing, and other testing agency procedures.
- C. Should tested fireproofing fail to meet the performance criteria, the fireproofing shall be removed and reinstalled and retested at the Contractor's expense for labor, materials and time.

END OF SECTION

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Baruch College - Site B  
New York, NY  
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SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Work of this Section shall be governed by the Contract Documents. Provide materials, labor, equipment and services necessary to furnish, deliver and install all work of this Section as shown on the drawings, as specified herein and/or as required by job conditions.
- B. The Work shall include, but is not limited to the following:
  - 1. Insulation as scheduled herein.
  - 2. Mechanical fasteners.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02517: Bituminous set exterior pavers.
- B. Section 03300: Cast-in-place concrete.
- C. Section 04222: Interior concrete block masonry.
- D. Section 05300: Metal deck.
- E. Section 04420: Exterior stonework.
- F. Section 05300: Metal deck.
- G. Section 07115: Hot-applied asphaltic membrane.
- H. Section 07270: Firestopping - perimeter firesafing.
- I. Section 08960: Interior aluminum window walls - perimeter safing and wall insulation.
- J. Section 09250: Gypsum drywall - acoustical and thermal insulation concealed by the drywall.

1.03 QUALITY ASSURANCES

- A. The installer shall be a firm who can produce supporting documentation to show that the firm is a specialty company who has been in business for the past five (5) years, and has performed such work on projects equal to the size as this one.

B. Reference Standards

1. American Society for Testing & Materials (ASTM)

ASTM C-177	Test for Steady State Thermal Transmission Properties by Means of the Guarded Hot Plate
ASTM C-272	Water Absorption of Core Materials
ASTM C-518	Test for Steady State Thermal Transmission Properties by Means of Heat Flow Meter

ASTM C-552	Specification for Cellular Glass Thermal Insulation
ASTM C-578	Specification for Preformed Cellular Polystyrene Thermal Insulation
ASTM C-612	Mineral Fiber Block and Board Thermal Insulation
ASTM C-665	Blanket Thermal Insulation
ASTM D-1621	Compressive Properties of Rigid Cellular Plastics
ASTM D-1622	Apparent Density of Rigid Cellular Plastics
ASTM D-1779	Adhesives for acoustical Materials
ASTM D-1929	Ignition Properties of Plastics
ASTM E-84	Surface Burning Characteristics of Building Materials
ASTM E-90	Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
ASTM E-96	Water Vapor Transmission of Materials
ASTM E-119	Fire Tests of Building Construction an Materials
ASTM E-136	Behavior of Materials in Vertical Tube Furnace @ 750°C
ASTM E-408	Total Normal Emittance of Surface Using Inspector-Meter Techniques
ASTM E-413	Rating Sound Insulation

## 2. Underwriters Laboratory (UL)

UL 723	Surface Burning Characteristics of Building Materials
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## 3. Thermal Insulation Manufacturers Assoc. (TIMA)

## C. Definitions

1. Thermal resistivity: Where the thermal resistivity of insulation products are designated by "R-value", they represent the reciprocal of thermal conductivity (K-value). Thermal conductivity is the rate of heat flow through a homogeneous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees F. between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

- D. Fire performance characteristics: Provide insulation materials identical to those whose indicated fire performance characteristics have been determined per the ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing and inspecting organization.

1. Surface burning characteristic: ASTM E-84.
2. Fire resistance rating: ASTM E-119.
3. Combustion characteristics: ASTM E-136.

E. Single-source responsibility for insulation products: Obtain each type of building insulation from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

#### 1.04 SUBMITTALS

A. The Samples and Certificates listed below are required to be submitted by the Contractor to the Architect, for review. An omission of an item or items does not relieve the Contractor from this responsibility, and for compliance with the Contract Documents, of which this is a part.

##### SAMPLES

Item No.	Quan.	Size	Description
S1	5	6" x 6"	Insulation, each kind
S2	5	Actual	Mechanical clips
S3	5	6" x 6"	Drainage mat

##### NOTARIZED CERTIFICATES OF COMPLIANCE

Item No.	Description	Standards
C1	Extruded Polystyrene	As specified
C2	Glass or Mineral Fiber	ASTM C-612/C-665
C3	Cellular Glass	ASTM C-552

#### B. Product Data

1. Submit manufacturer's catalog cuts and product test reports performed by a qualified nationally recognized independent testing laboratory noting compliance with R-values, fire performance, perm ratings, water absorption ratings, density and other properties, or information requested by the Architect.
2. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence compliance of plastic foam insulation with building code in effect for Project.

C. Submit U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous materials utilized during work of this Section.

D. Submit qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site ready for use in the manufacturer's original and unopened containers and packaging, bearing labels as to type of materials, brand name, and manufacturer's name. Delivered materials shall be identical to the reviewed submittals.
- B. Store materials under cover in a dry and clean location, off the ground, and remove materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
- C. Protect plastic insulation as follows:
  - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment. Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.
- D. Take every precaution to keep insulation dry, cover with protective waterproof materials.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Extruded Polystyrene
  - 1. Dow Chemical - Styrofoam
  - 2. U.C. Industries Inc. - Foamular
  - 3. Amoco Foam Products Co. - Amofoam-CM
  - 4. or an equal acceptable to the Architect.
- B. Glass or Mineral Fiber (Batts & Boards)
  - 1. Owens Corning Fiberglas
  - 2. Certain Teed
  - 3. U.S. Gypsum
  - 4. Manville Building Insulation/Div. of Schuller International, Inc.
- C. Mechanical Clips
  - 1. Miracle Adhesives Corp.
  - 2. Stic-Klip Mfg. Co.
  - 3. or an equal acceptable to the Architect.
- D. Drainage Mat
  - 1. American Hydrotech, Inc. - Hydrodrain 400.
  - 2. American Colloid - Aquadrain

3. Grace - Hydroduct
4. Nicolon-Mirafi - Miradrain
- E. Cellular Glass Insulation
  1. Pittsburgh Corning Corp. - Foamglas
  2. or an equal acceptable to the Architect.
- 2.02 EXTRUDED POLYSTYRENE (EP)
  - A. Rigid, cellular polystyrene thermal insulation with closed-cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C-578 for type indicated; with 5-year aged R-value of 5.4 and 5 at 40 and 75 deg. F. respectively; and as follows:
    1. Thickness noted on the drawings.
    2. Compressive strength as per ASTM D-1621.
      - 25 lb. pcf except under pavers
      - 60 lb. pcf under the pavers
    3. Surface burning characteristics: Maximum flame spread and smoke developed values of 75 and 450, respectively.
    4. Provide 1/4 inch per foot tapered insulation as noted.
  - B. Adhesive mastic as recommended by the acceptable manufacturer.
- 2.03 GLASS OR MINERAL FIBER - Blankets, Batts and Boards
  - A. Mineral or glass fiber blanket insulation: Provide glass or other inorganic fibers and resinous binders formed into flexible blankets; ASTM C-665; density of not less than 1.5 lbs. per cu. ft.; thermal conductivity (k-value at 75 degrees F.) - 0.27; manufacturer's standard sizes.
  - B. Rigid glass fiber boards with water-resistant binders formed into rigid non-combustible boards conforming to ASTM C-612, K-value of 0.25.
    1. Semi Rigid (SR)..... 2.25 pcf density
    2. Rigid (R)..... 3.00 pcf density
  - C. Foil faced: Reflective aluminum foil and asphalt vapor barrier laminated to one face, vapor transmission not more than 0.5 perms.
- 2.04 MECHANICAL CLIPS
  - A. Clips for securing rigid insulation in place shall be spindle anchor and washer type consisting of perforated metal plates with spindle welded to center and snap-on washers. Spindle and washers shall receive a corrosion resistant electro-zinc plating. Adhesives for securing clips in place: as recommended by the clip manufacturer.
- 2.05 DRAINAGE MAT
  - A. Two part, prefabricated geocomposite drain structure consisting of a formed polystyrene core covered on one side with a woven filter fabric.

1. Thickness: 7/16 inch.
  2. Compressive strength of 18,000 psi.
- 2.06 CELLULAR GLASS (CG) (Under Bituminous Set Cobbles)
- A. Flat blocks to thickness noted on the drawings, and having the following physical properties:
1. Compressive strength..... 100 psi
  2. Density..... 8 pcf
  3. Thermal conductivity..... 0.33
  4. Flame spread..... 5
  5. Conformance to..... ASTM C-552

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Study the Contract drawings and specifications with regard to the work as shown and required under this Section so as to insure its completeness.
- B. Examine surfaces and conditions to which this work is to be attached or applied and notify the Architect if conditions exist which are detrimental to the proper and expeditious installation of the work. Starting on the work shall imply acceptance of the surfaces and conditions to perform the work as specified.
- C. Verify dimensions taken at the job site affecting the work. Bring field dimensions which are at variance to the attention of the Architect. Obtain decision regarding corrective measures before the start of installation.
- D. Cooperate in the coordination and scheduling of the work of this Section with the work of other Sections so as not to delay job progress.

3.02 INSTALLATION

A. General

1. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed conditions of installation are not available or do not apply to Project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with Work.
2. Extend insulation full thickness indicated over entire surface to be insulated.. Apply single layer of insulation of required thickness, unless otherwise indicated or required to make up total thickness.
3. Coordinate Work with installation of other materials.



4. Cut and fit tightly around penetrating elements and abutting construction. Do not obstruct ventilation spaces. Fill gaps and voids with insulation and mastic.
5. Always face the foil face toward the warm side and all abutting joints shall be taped with 4" wide self-adhering foil tape.

B. Mechanically Attached Insulation

1. Hold insulation in place by being impaled on spindle anchors and washers. Install insulation in as large sections as practical, to avoid as many field joints as possible. Secure anchor clips to surface using recommended adhesive. Provide a minimum of one (1) spindle anchor for each three (3) square feet of insulation. Impale insulation onto the anchors and hold in place by washers and prongs.
2. Always face vapor barrier toward the warm side and use foil tape to tape all joints.
3. Secure insulation to exterior face of block walls prior to the installation of the exterior stone cavity walls. Neatly cut to suit encountered conditions.

C. Horizontal (Under Pavers/Over Membrane)

1. Install horizontally in as large sections as practical with neatly butted and offset joints, and accurately cut to suit encountered conditions.
2. Install the drainage mat over the rigid insulation with offset joints from the insulation and with proper laps at ends and edges. Neatly cut around drains and encountered conditions.

3.03 SCHEDULE OF INSULATION

Location	Type	Minimum R Value, or Thickness
Outside face of exterior walls behind stone walls	EP	1-1/2"
Over waterproof membrane under pavers	EP	4"
Under slab at Plaza deck	GF/FF	3 semi-rigid

For sound attenuation blankets concealed within acoustical partition assemblies refer to Section 09250 - Gypsum Drywall.

For fire safing at perimeters refer to other specification Sections.

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FF = foil face  
EP = extruded polystyrene  
GF = glass or mineral fiber  
R = rigid 3 lbs. density minimum  
B = batts

END OF SECTION

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SECTION 09550

WOOD FLOORING  
(FL-2, 5, 6, 7 and 7A)

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Work of this Section shall be governed by the Contract Documents. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install all work of this Section as shown on the drawings, as specified herein, and/or as required by job conditions.
- B. The Work shall include, but is not limited to the following:
  - 1. Wood Strip Flooring
    - a. Maple strip flooring.
    - b. Tempered hardboard sprung wood flooring.
  - 2. Plywood subflooring.
  - 3. Sleepers
    - a. Channel encased.
    - b. Neoprene cushions under sleepers.
    - c. Plywood deflection stops under sleepers.
    - d. Insulation between sleepers at all locations.
  - 4. Vapor barrier damping paper.
  - 5. Fastening nails and concrete anchoring devices.
  - 6. Perimeters
    - a. Perimeter caulked expansion joint (FL-7 & 7A).
    - b. Perimeter cushions - all other.
  - 7. Field applied finish.
  - 8. Wood bases where scheduled.
  - 9. Location
    - a. See Schedule at back of Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03300: Cast-in-place concrete.
- B. Section 06100: Rough carpentry - 500 Lecture Hall platform, Recital Hall stage.
- C. Section 06200: Finish carpentry.
- D. Section 09677: Resilient sports flooring.

E. Section 09901: Interior joint sealers.

1.03 QUALITY ASSURANCES

A. Qualifications

1. Manufacturer shall be a company specializing in hardwood strip wood flooring with not less than ten (10) years experience.
2. Installer shall be a firm experienced in the installation of the flooring specified herein and with not less than five (5) years experience.

B. Reference Standards

1. National Maple Flooring Manufacturers Assoc. (NMFMA)
  - Recommendations for Preparation, Finishing and Testing of Concrete Subfloors
  - Care and Preservation of Your Wood Floors
2. Architectural Aluminum Manufacturers Assoc. (AAMA)
  - AAMA SG-1 Neoprene
3. American Plywood Association (APA)
4. American National Standards Institute (ANSI)
5. American Society for Testing and Materials (ASTM)
  - ASTM C-665 Acoustical Insulation
  - ASTM D-4397 Polyethylene Sheeting
6. National Wood Flooring Association (NWFA)

C. Performance Characteristics

1. Floor system shall have been tested and passed the requirements of DIN 18032, Part II as set out below.
  - a. Shock absorption: Shall be 63%.
  - b. "Uniformity" of shock absorption: Plus or minus 2 percentage points shall be maintained throughout entire surface at each test point using DIN Test 18032, Part II.
  - c. Deflection: Shall be 1.8 mm minimum.
  - d. Area deflection: (Isolation of impact) less than 15%.
  - e. Friction: Range 0.5 - 7.0 per DIN Test Method.
  - f. Rolling load: 337.6 lbs. load without damage.

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## 1.04 SUBMITTALS

- A. The Samples and Certificates listed below are required to be submitted by the Contractor to the Architect, for review. An omission of an item, or items, does not relieve the Contractor from this responsibility, and for compliance with the Contract Documents, of which this is a part.

SAMPLES

Item No.	Quan.	Size	Description
S1	4	6" long	Wood flooring w/finish
S2	4	6" x 6"	Vapor barrier
S3	4	6" long	Steel encased sleeper
S4	1	18" x 18"	Sample floor installed on 3/4" plywood showing complete system showing range of color, graining and finish.
S5	4	Actual	Each fastening device
S6	4	Actual	Cushion under sleeper
S7	4	6" long	Wood base w/finish
S8	5	8" x 8"	Tempered hardboard
S9	5	6" x 6"	Acoustic damping paper
S10	5	6" long	Vented base cove

NOTARIZED CERTIFICATES OF COMPLIANCE

Item No.	Description	Standards
C1	Wood flooring	As specified
C2	Neoprene	AAMA SG-1

## B. Shop Drawings

1. Submit shop drawings to the Architect for review in accordance with the requirements of the Contract Documents prior to installation and shall include floor plans, sections and details where flooring abuts other materials and encountered construction.
  - a. Indicate each system's components, note amount of layers of subfloors and sleeper types.
  - b. Indicate extent of bases.
  - c. Show mineral fiber insulation between sleepers at the Double Gym and sleeper spacing under bleachers.

- d. For the Flexible Theater and Scene Shop indicate hardboard floor, cushioned sleepers, vented cove base insulation and other components as noted.
  - 2. Indicate where the flooring abuts the work of other trades and coordinate accordingly.
  - C. Product Literature
    - 1. Submit manufacturer's product data, catalog cuts, specifications and installation instructions.
  - D. Submit qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.
- 1.05 DELIVERY, STORAGE & HANDLING
- A. Protect wood flooring materials from the weather while in transit from point of origin or fabrication to the job site. When delivered at the building place materials immediately under cover and adequately protect from damage, keep clean and store under the conditions that will prevail during the installation.
  - B. Deliver flooring to the job site ready for installation. Storage of finished items at the job site awaiting installation will not be permitted.
  - C. Remove delivered materials which do not conform to reviewed samples or are damaged, marred or otherwise not suitable for installation from the job site and replace with acceptable materials.
  - D. Under no circumstances shall the finished flooring be delivered to any part of the building until all concrete, cement, spackle, masonry and other "wet" work has been completed and thoroughly cured and dried out.
- 1.06 JOB CONDITIONS
- A. Do not install wood flooring until all masonry, spackle and other "wet" trades have been completed and after the overhead mechanical trades have finished their work in these areas.
  - B. Where wood flooring is to be installed, maintain room temperatures of 65 degrees F. or more for a week preceding and throughout the duration of the work.
  - C. Open flooring bundles to allow flooring to acclimate. Materials shall be acclimated to the room they are to be installed in for at least 14 days prior to installation.
  - D. Relative humidity shall be 35 percent or less. Substrates shall have a maximum moisture content of 10 percent or less.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE FLOORING MANUFACTURERS

- A. Robbins Sports Surfaces
  - 1. Bio Channel II (FL-6), Bio Channel I (FL-5)

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2. Flooring continuous strip XL (FL-2, FL-5 & FL-6)

B. or an equal acceptable to the Architect.

## 2.02 MATERIALS

### A. Wood Flooring

1. Quarter sawn, edge grain, kiln dried, tongue and groove kerfed, random lengths, tongues below center line, clear or better grade by NMFMA.

a. Specie: Maple - continuous strip "XL", 1st Grade.

b. Size

- 2-1/4" wide x 25/32" thick for FL-2 & FL-5, and 33/32" thick for FL-6.

- Uniform lengths of 6'-6" to 7'-0".

c. Maximum moisture content of 9 percent.

2. Tempered hardboard faces with C veneer plywood core:

a. Size: 4'-0"W x 8'-0"L x 3/4" thickness.

b. Manufacturer: Simpson Timber Co. - Exterior Plyron.

B. Plywood for subflooring shall be rated Sheathing, Exposure 1 fir or southern pine.

1. 23/32" thick single layer.

### C. Sleepers

1. 1-3/8" x 2-5/8" x 8" factory assembled steel encased treated wood sleepers. Pad shall be 7/16" double trapezoidal EPDM rubber with reverse cavity and tabbed for attachment. Upper and lower surfaces are non-coextensive.

2. Cushioned sleepers consisting of 7/16" double trapezoidal EPDM rubber with reverse cavity and non-coextensive lower and upper surfaces.

a. Sleepers: 2" thick x 3" x 4" pine or fir, KD treated with "Woodlife", have five (5) cushions stapled to the bottom side.

b. For FL-7 and FL-7A provide cushioned sleepers with neoprene pads spaced 16 inches o.c. of 5/8 inch thickness and 50 durometer hardness.

c. 3/8" plywood deflection stop blocks at 16 inches o.c.

### D. Nails/Fasteners

1. For securing strip flooring to plywood subflooring shall be 1-3/4" barbed cleats.

2. For securing wood bases: Finishing nails 2" long.

3. For subfloor to channels: 1-1/2" - 1-5/8" subflooring nails.



4. Channel anchors: 1-1/4" long steel power actuated or pneumatic anchors.
- E. Vapor barrier shall be 6 mil polyethylene as ASTM D-4397.
  1. Vapor barrier under the flooring at the Recital Hall Stage and atop the metal deck shall be 15 lb. roofer's organic felts conforming to ASTM D-226.
  2. Vapor barrier for floors FL-7 and FL-7A shall be 6 mil polyethylene.
- F. Perimeter cushions shall be virgin closed cell neoprene Shore A hardness 50-60, 1/2" thick unless otherwise noted.
- G. Insulation 1-1/2" semi-rigid mineral fiber conforming to ASTM C-665.
- H. At perimeter of floors FL-7 and FL-7A provide a one-component latex sealant and backer rod conforming to ASTM C-920.
- I. Non-bituminous acoustic interlayer shall be building paper conforming to Fed. Spec. UU-B-790.
- J. Wood vented cove base.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Study the Contract drawings and specifications with regard to the work as shown and required under this Section so as to insure its completeness.
- B. Examine surfaces and conditions to which this work is to be attached or applied and notify the Architect if conditions or surfaces exist which are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work as specified.
- C. Verify dimensions taken at the job site affecting the work. Bring field dimensions which are at variance to the attention of the Architect. Obtain decision regarding corrective measures before the start of fabrication of items affected.
- D. Cooperate in the coordination and scheduling of the work of this Section with the work of other Sections so as not to delay job progress.

#### 3.02 INSTALLATION

- A. General
  1. Execute the finish flooring work using skilled workers in accordance with the reviewed submittals and encountered conditions.
  2. Clean the encountered flooring of dirt and debris. Maintain room temperature at 55 degrees F. for 48 hours before and after installation.
- B. Vapor Barrier

1. Over the encountered concrete substrate install one layer 6 mil polyethylene with end and side joints lapped at least 6".

C. Cushioned Sleepers (FL-7 & FL-7A)

1. Install the sleepers in parallel rows at 16 inches o.c. at right angles to the plywood subfloor. Shim as required.
2. In addition, between the neoprene cushions provide 3/8 inch thick plywood deflection stops same width as sleeper spaced between the neoprene cushions at 16 inches o.c. Secure the cushions and the deflection wood stops to underside of sleepers using mechanical means and glues.
3. Between the sleepers install the glass fiber unfaced insulation.

D. Steel Channel Sleepers (FL-5 and 6)

1. Place the channels 16 inches o.c. end to end, staggering end joints in adjacent rows. Anchor channels at predetermined locations using power actuated or pneumatic anchoring methods.
2. At under-bleacher location for the Double Gym (FL-6) reduce the sleeper dimension so they are spaced 8 inches o.c. in lieu of 16 inches o.c.
3. Between the sleepers install the mineral fiber insulation.

E. Plywood Subflooring (FL-5, 6, 7 and 7A)

1. Secure the plywood subflooring using recessed nails spaced 10 inches at perimeter and 12 inches on center at intermediate locations. Offset joints in adjacent panels. Neatly cut to suit encountered conditions. Touch sand to dead level condition.
2. Install the subflooring parallel to the sleeper channels and fasten 6 inches o.c. along each channel sleeper.
  - a. For floors FL-7 and FL-7A install the plywood subfloor at right angles to the sleepers and fasten 6 inches o.c. along each sleeper.
  - b. Hold back subfloor 1/16" at perimeter and provide 3/4" wood blocking under perimeter sleepers.
3. Tempered Hardboard (FL-7 & 7A)
  - a. Over the plywood subfloor install one (1) layer of non-bituminous paper acoustic damping in as large sheets as practical with joints offset from plywood and with 4" laps at side and end joints. Power staple at 24 inches o.c.
  - b. Install the tempered hardboard in whole sheets and half-lapped to the plywood layer below and secure in place using countersunk power driven, phillips head wood screws spaced along perimeter at each bearing and not over 12 inches o.c. and 10 inches o.c. along each bearing at intermediate locations.

F. Wood Strip Flooring

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1. Install the flooring in the direction noted on drawings. Begin installation at center of room using double tongue starter or reverse spline method. Blind nail to each sleeper and 3/4" from ends. Offset strips a minimum of 18". Do not install strips shorter than 10".
  2. Machine fasten 10-12 inches o.c. perpendicular to sleeper. Channels with end joints properly driven up and provide proper spacing for encountered humidity conditions. Provide 2 inch expansion void at perimeter and at all vertical obstructions.
- G. Provide perimeter expansion strips around perimeter where flooring abuts vertical surfaces. Coordinate work and details where flooring abuts other materials.
- H. Install continuous wood bases at perimeter of wood flooring where noted. Miter inside and outside corners. Install in as long lengths as practical, no pieces shorter than 3 feet. Secure to encountered construction using countersunk finishing nails spaced 1" from ends and not over 9" o.c. in between. Wood fill and sand smooth and flush countersunk nail locations.
1. Finish to match flooring.
- I. Installation shall be noise and squeak free. Remove areas and/or boards which are squeaky or loose and/or repair to the full satisfaction of the Architect.

3.03 FINISHING

- A. Wood strip flooring shall be sanded with power driven sanders using No. 2-1/2 sandpaper followed by No. 1-1/2 sandpaper and then No. 1/2 and finishing with No. 00. After sanding buff floor using 100 grit screenback or equal grit sandpaper with a heavy duty buffing machine. Vacuum floor before applying sealer or finish coats. Flooring shall present a smooth surface without drum stop marks, gouges or streaks.
- B. Finish coats shall be applied in strict accordance with manufacturer's recommendations with proper applicators. Time lapse between coats shall be as per the acceptable manufacturers' recommendations. Finished flooring shall be identical to the reviewed submittals.
- C. Remove all dust after each sanding operation. Sanding marks appearing on the finished flooring will not be permitted.
- D. Flooring shall be finished as follows:

FL-2, FL-6, FL-7

Two (2) coats oil base high quality non-yellowing polyurethane with steel wool rub between coats and a one (1) topcoat of high quality, non-yellowing polyurethane with a matte finish luster level.

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FL-5

Stain with four (4) coats of Duraseal Ebony allowing to dry between coats and finish with three (3) coats of non-yellowing high quality polyurethane with a matte finish luster level.

FL-7A

Two coats of black porch enamel paint. Flash patch and wood fill all recessed screw holes and joints, sand smooth, and then apply two coats of black porch enamel paint.

E. Game Lines - Double Gym (FL-6)

1. 2 inches wide in colors to be selected and in accordance with all the athletic organizations' rules and regulations for all sports activities.

3.04 PROTECTION AND ADJUSTMENTS

- A. Immediately after installation and finishing, protect the flooring and do not remove until installation is accepted.
- B. Repair and/or replace damages due to construction procedures or lack of proper protection, at no additional cost.
- C. Provide a guarantee in writing from the installer and countersigned by the Contractor, that the installed flooring will not buckle, lift open at joints, or otherwise show any defects for a period of one year after acceptance due to improper workmanship and materials. Guarantee shall be in a form acceptable to the Owner and Architect.

3.05 SCHEDULE OF WOOD FLOORING

No.	Location	Brief Description of Substrate
FL-2	500 Seat Lecture Hall	Recital Hall Vapor barrier, steel encased cushioned sleepers, insulation and plywood subfloors.
FL-5	Recital Hall	Vapor barrier, steel encased cushioned sleepers, insulation and plywood subfloors. Black stained finish.
FL-6	Double Gym	Vapor barrier, steel encased cushioned sleeper, insulation and one (1) layer of plywood subfloor, painted game lines.
FL-7	Scene Shop Rehearsal Room	Vapor barrier, cushioned and deflection stopped parallel sleepers, insulation between sleepers, one (1) layer plywood subfloor, one (1) layer acoustical damping, one (1) layer tempered hardboard, perimeter sealant expansion joint, vented cove base. Finish shall be two (2) coats of clear polyurethane with steel wool rub between coats.
FL-7A	Flexible Theater	Same as FL-7, except finish shall be

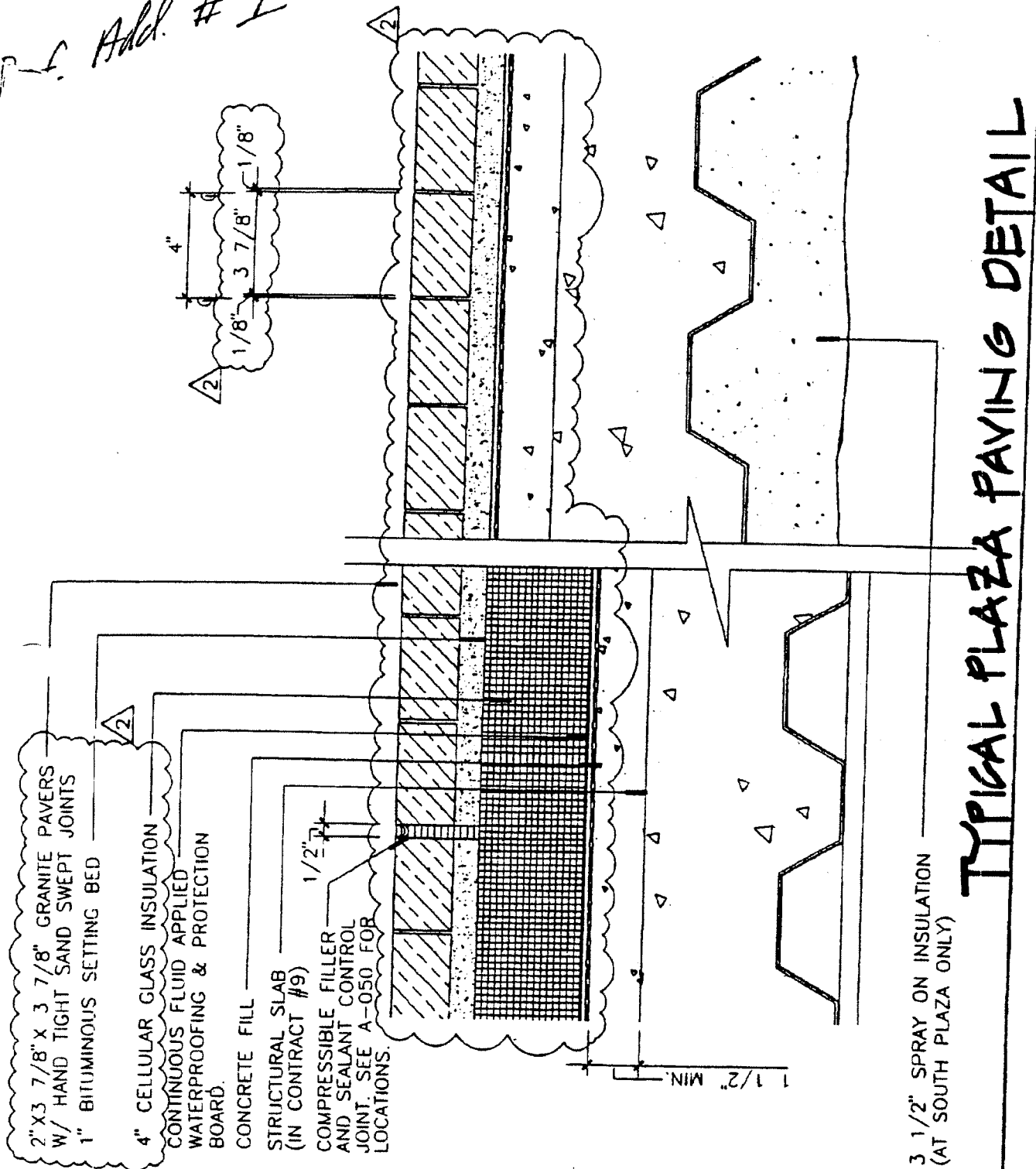
Wood Flooring  
Page 09550-10

black porch enamel paint.

END OF SECTION

The paving system at the north and southeast exterior plazas has been revised to a bituminous set paving systems. Please find attached herewith drawing SK- 973 which shows a typical system detail which shall apply at all conditions.

*Ref. Add. # 1*



## Bach Academic Complex - Site B

100 LEXINGTON AVENUE NEW YORK, NY 10010

OWNER

LEGISLATIVE AUTHORITY OF THE STATE OF NEW YORK, DA# 6500 1802 2178  
1 PENNSYLVANIA PLAZA NEW YORK, NY 10119

ARCHITECT

KPF ASSOCIATES  
11 WEST 57TH STREET  
NEW YORK, NY 10019

REF. DETAIL/SHEET NO.

2/A-055

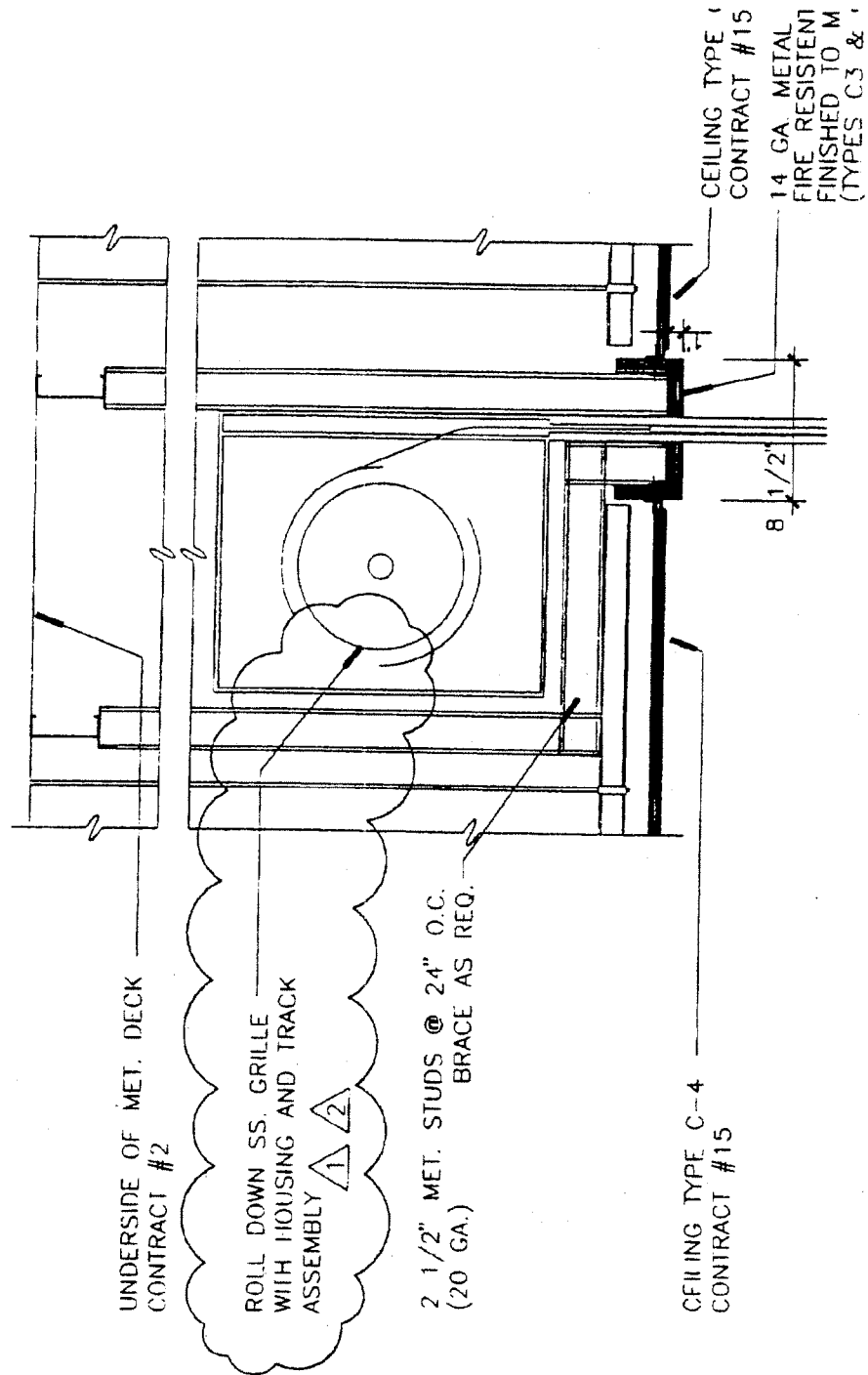
SKETCH NO.

973

SCALE

REVISION

DATE



# Baruch Academic Complex - Site B

55 LEXINGTON AVENUE NEW YORK, NY 10010

OWNER

DORMITORY AUTHORITY OF THE STATE OF NEW YORK, DA • 6500 1802 2178  
1 PENNSYLVANIA PLAZA NEW YORK, NY 10119

ARCHITECT

KPF ASSOCIATES  
11 WEST 57TH STREET  
NEW YORK, NY 10019

REF. DETAIL/SHEET NO.

6/A-822

SKETCH NO.

974

SCALE

1 1/2" = 1'-0"

NO. 2

REVISION

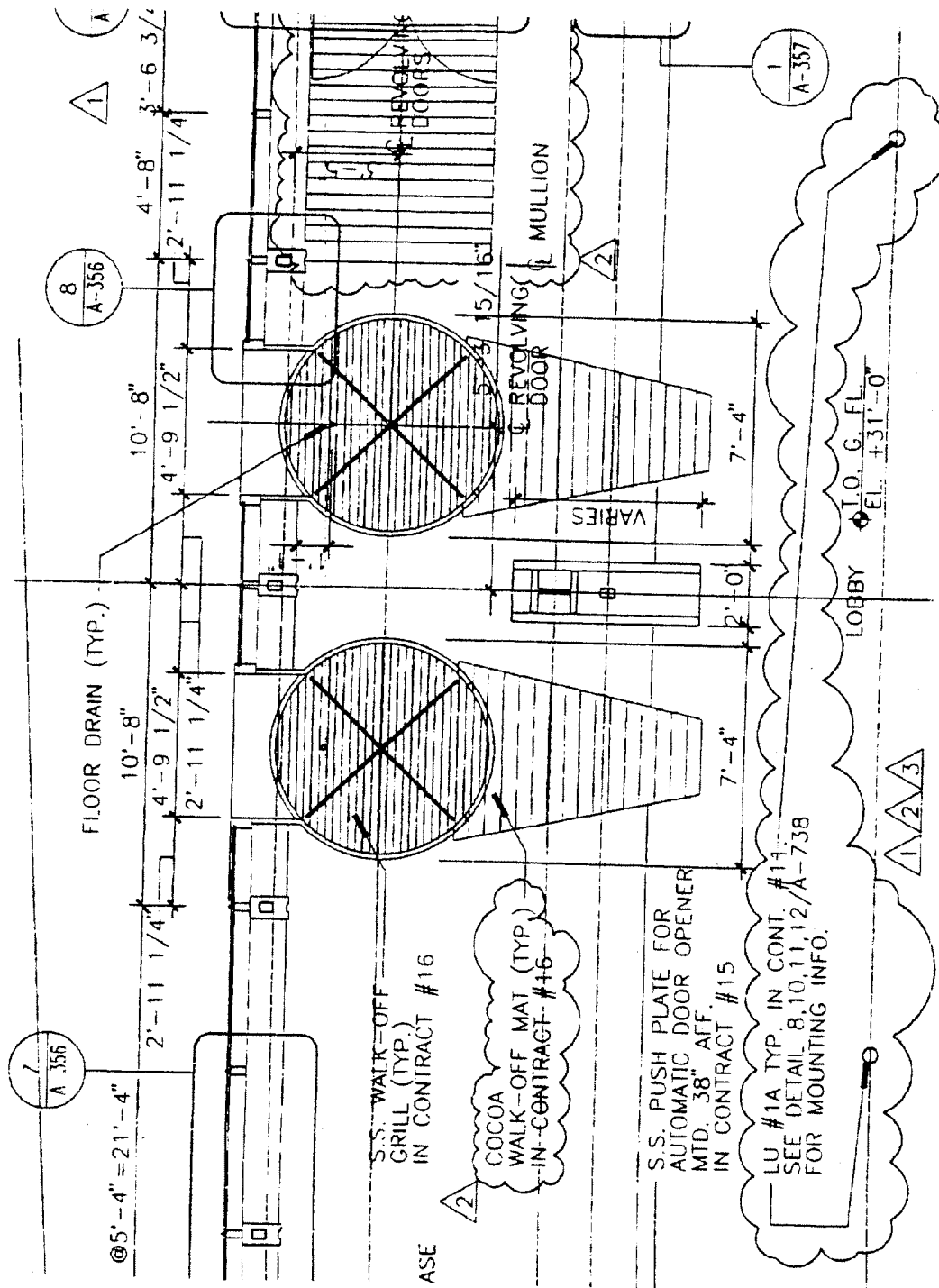
DATE

ADDENDUM •1 (CONTRACT •16)

5/29/98



1/4" = 1'-0" 1/A-340

**Baruch Academic Complex - Site B**

55 LEXINGTON AVENUE NEW YORK, NY 10010

OWNER

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ARCHITECT

KPF ASSOCIATES  
11 WEST 57TH STREET  
NEW YORK, NY 10019

REF. DETAIL/SHEET NO.

1/A-340

SKETCH NO.

915

NO. 3

REVISION

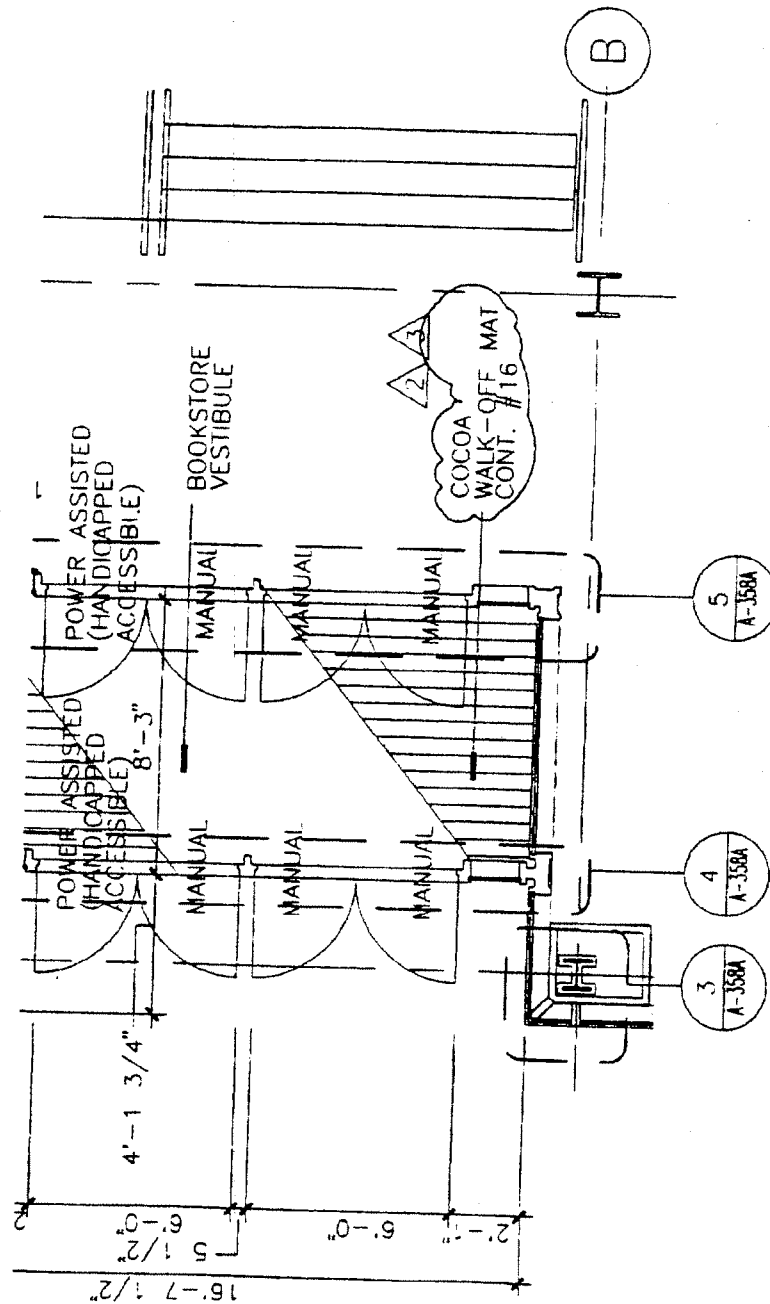
DATE

ADDENDUM #1 (CONTRACT #16)

5/29/98

SCALE

1/4" = 1'-0"



# Baruch Academic Complex - Site B

55 LEXINGTON AVENUE NEW YORK, NY 10010

OWNER

DORMITORY AUTHORITY OF THE STATE OF NEW YORK, DA • 650C • 802 2178  
1 PENNSYLVANIA PLAZA NEW YORK, NY 10119

ARCHITECT

KPF ASSOCIATES  
11 WEST 57TH STREET  
NEW YORK, NY 10019

REF. DETAIL/SHEET NO.

5/A-340

SKETCH NO.

976

SCALE

1/4" = 1'-0"

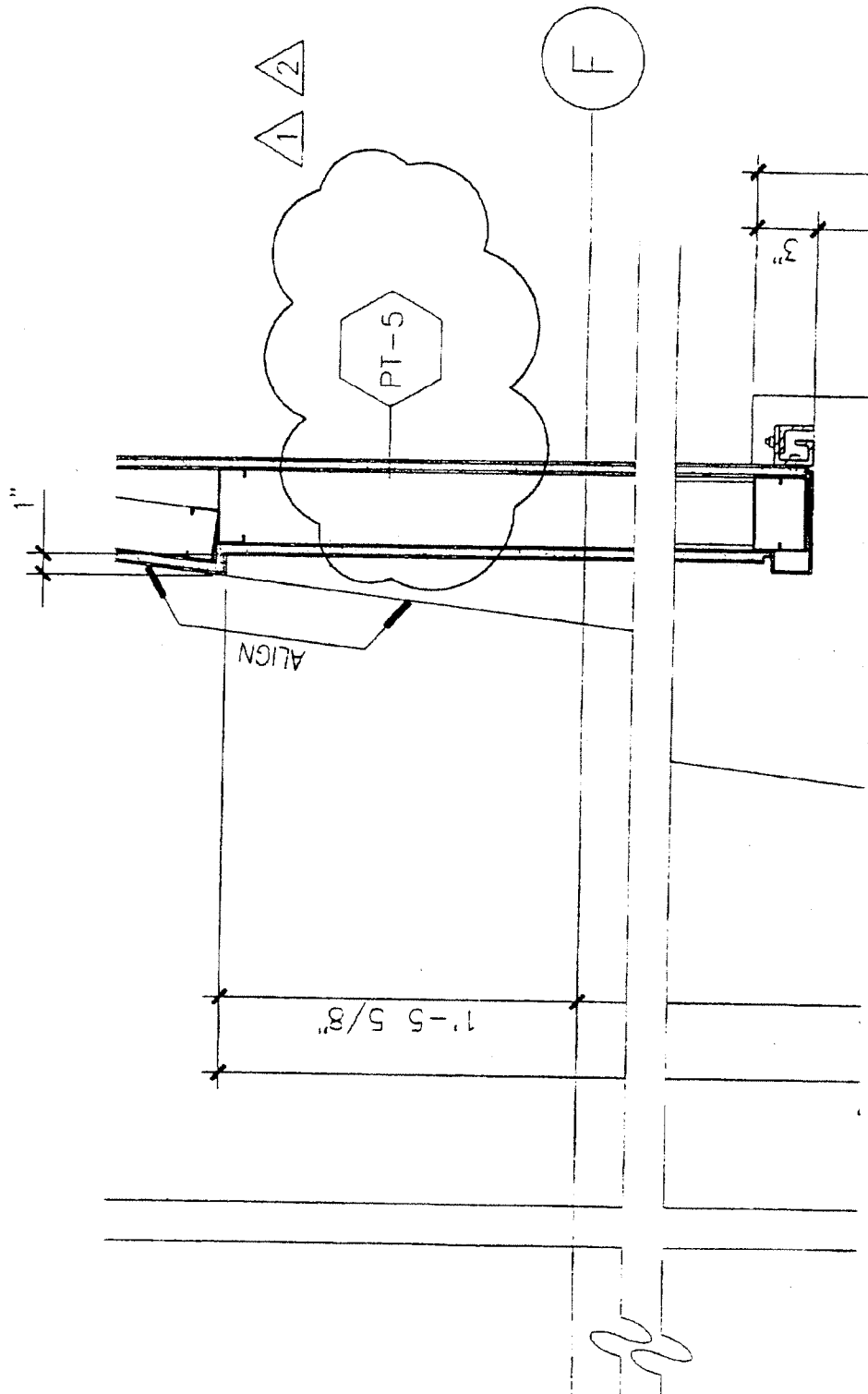
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REVISION

DATE

ADDENDUM • 1 (CONTRACT • 16)

5/29/98



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55 LEXINGTON AVENUE NEW YORK, NY 10010

OWNER

EDUCATION AUTHORITY OF THE STATE OF NEW YORK, DA • 6500 1802 2178  
1 PENNSYLVANIA PLAZA NEW YORK, NY 10119

ARCHITECT

KPF ASSOCIATES  
71 WEST 57TH STREET  
NEW YORK, NY 10019

REF DETAIL/SHEET NO.

7/A - 822

SKETCH NO.

977

SCALE

1 1/2" = 1' - 0"

NO. 2

REVISION

DATE

ADDENDUM • 1 (CONTRACT • 1E)

5/29/98